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            T A B L E   O F   C O N T E N T S

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                      E D I T O R I A L S
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    This is the first issue I have compiled since July of 1989.
    Quite frankly I have just been too busy to work on the Digest a
    whole lot,   and I have not been getting much in the way of
    article submissions from you readers.   Anyway, here is #6, I
    have already started collecting information for #7 and it should
    be available sometime in early January.   I have also included a
    small questionare in this issue.   I am interested in who is
    reading this Digest and I would like to hear from you.   Please
    take the time to fill it out and mail it back. I appreciate the
    feedback. If your club or organization has anything that they
    would like included in the Digest, just send it. I can accept
    IBM 360K or IBM 720K disk formats. You can also use plain old
    paper mail as well. If you run across an interesting newsletter
    that has no reprint restrictions, send it along.

73 de Brian Murrey - Editor   KB9BVN

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                         B U L L E T I N S
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    The R.A.I.N. Dialup Service (R.D.S) provides programming for

both hams and communications devotees. Produced by R.A.I.N.,
(the Radio Amateur Information Network) Foundation, the R.D.S.
updates 1:00 a.m. (CST) Fridays at (708) 299-INFO from Des
Plaines, IL.

The current edition will be on line from Dec. 1-7, 1989, and
includes: the story behind World Radio Magazine on tape, with
Tom Carten, K1PZU.--10 minutes of quality ham radio programming
that can be broadcast via Amateur Radio as authorized by FCC
regulation.

GIVE THE R.D.S. A CALL!

Additional R.A.I.N. programming can be heard on the HF ham
bands: The I.A.R.N., International Amateur Radio Network, airs a
45-minute program 5 times daily simultaneously on 3975 KHz
(LSB); 14275, and 28475 KHz (USB) at these UTC times: 1200,
1400, 1800, 2200, and 0100. There are two additional Sunday
transmissions: one on 3890 KHz (AM) at 2300; and one on 7290 KHz
(AM) at 2400. The I.A.R.N. program is transmitted by Glenn
Baxter, K1MAN, in Belgrade Lakes, ME.

The GATEWAY RADIO NEWS LETTER is transmitted by Vern Jackson,
WA0RCR, from Wentzville, MO. It typically lasts an hour and can
be heard on 1860 KHz (AM) on the 160-meter band at these UTC
times: Sat.-Thurs. at 2300; Sundays at 1300, and 2100; Tue. at
1030 and Thurs. (combined with a live "net") at 0200.

ChicagoLink (previously the BEAR Information Service) is
transmitted Mondays by the KD9FA repeaters: 29.68, 145.225, and
224.48 MHz (FM) from Chicago, 7:30 p.m., (local central time).

FREE HAM RADIO PROGRAMMING: If you are looking for ham radio
programming on cassette for use on a local net or in your radio
club, the RP REPORT is available FREE of charge. These programs
consist of interviews and special reports available nowhere else
in any medium. To receive this month's 4 RP REPORTS, simply
send a blank C90 cassette, and an S.A.S.E. with $.45 return
postage. Produced by Hap Holly, KC9RP, the RP REPORT is
Available from R.A.I.N., the Radio Amateur Information Network
Foundation, P.O. Box 2565, Des Plaines, IL. 60017.

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                         A R T I C L E S
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     ==
     | Relayed from packet radio via |
     | N8EMR's Ham BBS, 614-457-4227 (1200/2400/19.2 telebit,8N1) |
     ==

     GATEWAY: The ARRL Packet Radio Newsletter
     Volume 6, Number 1 - September 22, 1989

     Published by The American Radio Relay League
     225 Main Street, Newington, CT 06111

     Stan Horzepa, WA1LOU, Editor

     HAPN-1 SOFTWARE ENHANCED

     The HAPN-1 packet-radio adapter software has a fresh look! The
     long-awaited multiconnection software is now available, the
     AX.25 software package has been extensively rewritten and new
     programs have been added to the library. [HAPN-1 is a hardware
     and software package developed by the Hamilton (Ontario) Area
     Packet Network (HAPN) for the IBM PC and its clones that
     consists of a TNC on a PC card that is installed in a computer
     expansion slot and a variety of software to support the
     hardware.]

     Software Reorganization

     The AX.25 Level 1 functions have been broken out of the m25
     program and placed in a device driver. The device driver,
     hapn1.sys, is loaded from your config.sys file and becomes part
     of DOS. It manages all of the hardware functions associated
     with the HAPN-1 hardware. This greatly simplifies m25 and makes
     it possible to extend it to support new features such as
     multiconnections. In addition, the device driver is similar to
     a TNC running KISS code, which makes it suitable for use by
     other applications that already contain Level 2 functions, such

as TCP/IP.

Multiconnect

M25 can be customized to provide one to four concurrent
connections or sessions (HAPN has found that two or three
sessions are sufficient for most users; fewer sessions means
that m25 uses less memory). In addition to th connected
sessions, there is one special session called the monitor
session that is active all of the time. It permits you to
monitor the channel even when connected.

The c25 program supports multiple sessions by allowing you to
switch from one session to the next by pressing a function key.

Information about the session, such as session identification
and the connected station's call sign, are provided for each
session, making the use of multiple connectons very simple and
easy to use. File transmission and reception operates in all
sessions as do the file transfer utility programs.

A new "calls heard" dialog is now available in c25. It displays
the last ten different call signs heard in the monitor session
with the time when they were last heard.

New Applications

The Bulletin Board and Utilities diskettes now contains XPacket
and YAPP file transfer programs, in addition to the old sf/rf
programs. These new programs are compatible with PBBSs that
support these protocols making it much easier to exchange files
with them.

There is also a weather facsimile program for receiving WEFAX
images from various sources on HF and displaying them on your
PC. All that is required is that you apply the received audio
from your HF receiver to the HAPN-1 and tune in one of the WEFAX
transmissions on HF. No hardware changes are required.

HAPN also provides a NET/ROM utility called SIGNON for remotely
accessing and updating parameters in the node. The program
automatcally performs the password sign-on procedure for NET/ROM
SYSOPs. After the sign-on procedure, changing parameters is
done by an editor showing the formatted parameters. Non-SYSOPs

cannot change the parameters, but are still able to browse
through them and learn more about the network. Formatted setups
can be printed or saved to disk.

TCP/IP

A version of the TCP/IP program NET.EXE is available from HAPN
that supports HAPN-1 using the new device driver hapn1.sys.
This version is very reliable and overcomes all the HAPN-1
problems users were having with the released version of NET.EXE.

Incompatibility With MSYS Multi-User PBBS

An incompatibility between the HAPN-1 software and the MSYS PBBS
exists. The symptom is the uncontrolled display of headers when
an MSYS frame is received. This occurs because MSYS transmits
incorrect SSID bytes inthe AX.25 header. Most TNCs have been
programmed to ignore the unused bits and function normally,
however, the HAPN-1 software expects the bits to be set
according to the protocol and malfunctions when incorrect frames
are encountered. This problem has been fixed in the current
release of the software.

Software Availability

Further information may be obtained from:

 HAPN
 Box 4466
 Station D
 Hamilton, Ontario
 Canada L8V 4S7

8th ARRL COMPUTER NETWORKING CONFERENCE

The 8th ARRL Computer Networking conference will be in Colorado
Springs, Colorado, on October 7 at the US Air Force Academy.
This year's hosts include: Tucson Amateur Packet Radio (TAPR),
Academy Amateur Radio Club, USAFA Cadet Radio Club, Rocky
Mountain Packet Radio Association (RMPRA) and the American Radio
Relay League (ARRL). Numerous papers on TCP/IP andROSE

Networking have been received for this year's conference. This
year's presentations will continue the story of amateur packet
radio and AMTOR evolution. This is one conference you don't
want to miss. It's not too late to send in your reservation.
Contact Lori Weinberg at ARRL or TAPR President Andy Freeborn,
N0CCZ, at 719-598-8373 for more information.

Conference proceedings will be available at the Conference, or
directly from ARRL HQ after the Conference. Papers contained in
this year's edition are:

A Packet Broadcast Protocol, by J. Gordon Beattie, Jr., N2DSY

Licen-Free Spread Spectrum Packet Radio, by Albert G. Broscius,
N3FCT

The Implications of High-Speed RF Networking, by Mike Chepponis,
K3MC, Glenn Elmore, N6GN, Bdale Garbee, N3EUA, Phil Karn, KA9Q,
and Kevin Rowett, N6RCE

Local Distribution in the Amateur Radio Environment, by F.
Davoli, A. Giordano, I1TD, and S. Zappatore, IW1PTR

Implementation of a 1 Mbps Packet Data Link, by Glenn Elmore,
N6GN and Kevin Rowett, N6RCE

A Personal Packet Radio Mailbox Using Roserver, by Andre Funk,
KB7UV

Design of a Next-Generation Packet Network, by Bdale Garbee,
N3EUA

RADIOSERVER - A Package for TNC Access to a LAN in a UNIX
System, by A. Giordano, I1TD and S. Zappatore, IW1PTR

A Study of High Speed Packet Radio, by Roy E. Gould, N5RG

Prioritized Acknowledgement (PRIACK) Protocol, by Eric

Gustafson, N7CL

Routing, Oh Where is My International Routing, by William C.
Hast, TI3DJT

KA9Q Internet Protocol Package on the Apple Macintosh, by
Dewayne Hendricks, WA8DZP and Doug Thom, N6OYU

Protocol Level 8 or What About the Use?, by Lyle Johnson, WA7GXD

Thoughts on an Adaptive Link Level Protocol, by Lyle Johnson,
WA7GXD

Tucson Amateur Packet Radio packetRADIO Project, by Greg Jones,
WD5IVD

Amateur TCP/IP in 1989, by Phil Karn, KA9Q

OSI Services on TCP/IP Networks, by Anders Klemets, SM0RGV and
Stephen Pink, KF1Y

ATS-3 Packet Experiments: The Potential Impact of Packet Radio
upon Pacific Basin Communications, by Gerald A. Knezek, KB5EWV
and Greg Jones, WD5IV

ARES/Data UPDATE: A Packet Radio Batabase for Emergency
Communications with Conference Bridge, by W.E. Moerner, WN6I,
Sharon Moerner, N6MWD, and David Palmer, N6KL

ROSE X.25 Network Growth, by Thomas A. Moulton, W2VY

The ROSE X.25 Packet Switch, by Thomas A. Moulton, W2VY

Using the ROSE X.25 Packet Network, by Thomas A. Moulton, W2VY

AMTEX - NAVTEX-Like Dissemination Procedures for Amateur Radio,
by Paul Newland, AD7I

A Multi-Channel IBM PC Packet Interface, by Henk Peek, PA0HZP

Design and Implementation of an AppleTalk Local Area Network
Bridge, by R. Ramsey andW. Kinsner, VE4WK

DAMA - A New Method of Handling Packets?, by Detlef J. Schmidt,
DK4EG

Application Software for Packet Radio, by Robert Taylor, KA6NAN
and Dewayne Hendricks, WA8DZP

Callsign Server for the KA9Q Internet Protocol Package, by
Douglas Thom, N6OYU and Dewayne Hendricks, WA8DZP

A Brief Report on the Implementation of ROSE Networking, by

Barry E. White, VK2AAB

KANTRONICS RF MODEM COMING SOON

Kantronics, is expected to introduce an inexpensive 2-meter
9600-baud transceiver and TNC combo shortly. Dubbed the
"DVR-2," the unit combines a 2-watt, 2-channel,
crystal-controlled 2-meter transceiver with a TNC and a
9600-baud modem.

REPEATER DIRECTORY DEADLINE APPROACHES

The deadline for the 1990-1991 edition of the ARRL Repeater
Directory is approaching, so, if you would like your 24-hour
packet-radio system included in the next edition, please submit
information about your system(s) in the following format soon.

STATE/PROVINCE LOCATION: city, town, hill, etc FREQUENCY:
include frequency offset for full-duplex repeaters and include
each frequency used for multiport operations CALL SIGN NOTES:
include system type (digipeater, gateway, PBBS, node, switch,
other), coverage area (radius in miles) and links (if you are a
single-hop link between two or more systems, please list them)
SPONSOR: club name or individual call sign SOURCE: source of
this information

Please submit the information to:

 ARRL
 Repeater Directory Editor
 225 Main St
 Newington, CT 06111

Organizations with multiple listings are invited to submit data
on MS-DOS 5-1/4-inch diskettes.

Due to the great number of possible responses, this information
will be used to determine the major systems. Only major systems
will be listed in the directory.

MICROSAT THERMAL TESTING

All four of the AMSAT MICROSAT satellites were received at the

Martin-Marietta Space Simulation Laboratory (SSL) building where
they underwent the very important thermal vacuum chamber test.
This test creates a space-like environment. Each Microsat
(PACSAT, LUSAT, DOE and WEBERSAT) was carefully mounted onto a
special fixture designed to slide into the test chamber, after
which the entire fixture was rolled intothe 5- by 10-foot
chamber. Once inside, Bob McGwier, N4HY, was "inserted" (very
carefully, holding his body rigid so as not to touch any part of
the Microsats) into the test chamber to complete the task of
connecting the RF, power and data cables to a feedthrough
connector, which enabled the AMSAT Team to test the equipment
without losing chamber pressure. After cabling, the chamber was
checked for leaks; then the door was closed and sealed.

The first part of the test was to wait for the chamber to be
evacuated to the same pressure that a spacecraft would feel in
space. Once chamber pressure was reduced to 10-6 torr, the
Martin-Marietta technicians proceeded to raise the chamber
temperature to +45 degrees C. At this temperature, each
Microsat underwent a complete 12-hour functional checkout. This
"hot-dwell" period allowed for outgassing to collect on the
"cold plate". Out-gassing is a phenomena similar to what you'd
see when a soda can is first opened. In a vacuum, most
electrical components will experience outgassing of material and
that material is collected on ametal plate (the cold plate) to
prevent residue from adhering to the spacecraft. After thermal
vacuum testing, the cold plate is chemically analyzed to
determine where the residue originated. After 48 hours of
thermal vacuum testing, all Microsats were functioning
perfectly.

The Microsats continued through an 18-hour cold-dwell where the
temperature is brought from -15 to -25 degrees C. Some problem
did occur during testing (reluctant receiver channel and sticky
CPU resets) and were correctedafter removal from the thermal
vacuum testing chamber. The Microsats were returned to Boulder
for inspection and to be prepared for vibration tests which took
place earlier this week. From there, they will return to
Boulder for their September 25 trip to Kourou, French Guiana
where the Microsats are scheduled for launch on November 10.

from AMSAT News Service Bulletin

GATEWAY CONTRIBUTIONS

Submissions for publication in Gateway are welcome. You may
submit material via the US mail to:

     Gateway
     Stan Horzepa, WA1LOU
     75 Kreger Drive
     Wolcott, CT 06716-2702

or electronically, via CompuServe to user ID 70645,247 or via
Internet to 70645.247@compuserve.com. Via telephone, your
editor can be reached on evenings and weekends at 203-879-1348
and he can switch a modem on line to receive text at 300, 1200
or 2400 bit/s. (Personal messages may be sent to your Gateway
editor via packet radio to: WA1LOU @ W1AW.)

The deadline for each issue of Gateway is the Saturday preceding
the issue date (which is typically a Friday).

REPRODUCTION OF GATEWAY MATERIAL

Material may be excerpted from Gateway without prior permission,
provided that the original contributor is credited and Gateway
is identified as the source.

     Text of the GB2RS news broadcast, prepared by the Radio Society
     of Great Britain.

     Raynet was involved in the aftermath of the explosion at the
     Royal Marines School of Music at Deal in Kent last week. South
     Kent Raynet was called at 1030 by the British Red Cross, and
     shortly afterwards Kent Police requested the provision of
     communications facilities for the Red Cross since the telephone
     system had become overloaded. Raynet was stood down at 1630. A
     fuller report will appear in Radio Communication.

     Last July, Peter Dixon, G0HFQ, and his wife Gwenda were murdered
     whilst on holiday in South Wales. The Dyfed-Powys Police are
     still anxious to talk to any person who contacted Peter whilst
     he was operating as GW0HFQ mobile between the 19th and 29th of
     June; it's thought that he was using the 80, 40, 10 and 2 metre
     bands. The police also believe that Peter Dixon had a contact

with a mobile station on 10 metres using FM on the morning of
Wednesday the 28th of June. They also believe that he contacted
someone named Tom on Sunday the 25th of June, although they do
not know which band the contact took place on. Dyfed-Powys
Police would particularly like to speak to the operators of both
these stations. Anyone with any information is asked to contact
the Murder Incident Room at Haverfordwest Police Station. The
telephone number is 0437 763355.

The Blackwood Amateur Radio Rally takes place today, at Oakdale
Community College. All the usual attractions will be available,
and the doors open (opened) at 10.30 am.

Next, some repeater and beacon news. The Lakeland Fells UHF
repeater GB3LF has now returned to service from its new site at
Lancaster. It is on channel RB14, and reports would be welcomed
by its keeper G8UHO. GB3SW, the Salisbury UHF repeater, will
return to service from a new site on Saturday the 7th of
October. It is on channel RB9 and more information is available
from G3YWT. The Kingston-upon-Thames packet mailbox GB3KP has
inaugurated a new 432.675MHz port, under the callsign GB7KUT.
Finally, the Cornish 430MHz beacon GB3CTC is now back on the air
on 432.97MHz.

A number of new repeaters and mailboxes have been approved by
the DTI. The list is too long to read out, but details are
available from the Membership Services Department at RSGB
Headquarters or via the packet network and will appear in the
next-but-one issue of Radio Communication.

The annual Old-Timers QSO Reunion between members of RAOTA and
the Dutch OTC will take place tomorrow and Tuesday, between 0830
and lunchtime each day. Those interested are asked to call on
3600 kHz for SSB and 3550 kHz for CW. If 40 metres is usable,
calls can be made around 7070 and 7025 kHz respectively.
Members of RAIBC and others interested in the event are invited
to take part.

The RSGB's Prestel database will be on show at the Personal
Computer Show at Earl's Court this week, on the ClubSpot stand.

The Post Office has informed the Society that as of last
Wednesday morning, the latest callsigns issued were in the G0MI

and G7FU series.

The RSGB National HF Convention is taking place on Sunday 1/10/89. It's a one-day convention with a comprehensive programme of lectures, and in a special ceremony at 3.30 pm the DTI will announce the name of the 1989 Young Amateur of the Year. The Society will announce the names of the runners-up, and the prizes will be presented in the presence of a number of distinguished guests. Several RSGB committees have stands at the Convention, and a member of the Planning Panel will also be present.

The Chairman of the Society's EMC Committee will be announcing the new EMC Co-ordinator's scheme at the Convention. The intention of this scheme is to provide local contact points for general EMC advice, initially by telephone or post. There will be more information in a subsequent edition of Radio Communication.

The venue for the HF Convention is the Belfry Hotel at Milton Common, near Oxford. The doors open at 9.30 am, and light lunches and snacks will be available. More information on the Convention was given on page 27 of the September edition of Radio Communication, which also showed a map of how to get there.

The period between the 18th and 24th of September was affected by a large magnetic storm and aurora, which is believed to have been the result of a disintegrating filament. Both sunspot and solar flux levels have declined; the sunspot count has fallen from around 200 to about 150, although this is not surprising since the quiet side of the sun has been facing Earth. Solar flux levels have also declined, and averaged 200 for the period; levels fell to only 160 units on the 22nd. Geomagnetic levels were unsettled until the 17th. A sudden magnetic storm commenced at 1748 on the 18th, and it lasted until 1200 on the 19th - as a result, the geomagnetic A index rose from 44 units on the 18th to a full storm level of 82 units on the 19th. The average for the period was 28 units.

The solar wind particle input was reasonably high until the 22nd. The radio quality indices were above normal until the 17th and there was a typical pre-auroral enhancement, but it collapsed on the 19th and almost all circuits were unusable. However, the effect did not last long and levels were back to normal by the 20th. The Inda index for the period between the 11th and 17th was unsettled.

And now the ionospheric data for England and Wales. The daytime

F2 critical frequencies at Slough, as reported by Appleton,
averaged 9.6MHz. Levels fell from 10.9MHz on the 18th to only
4.9MHz on the 19th - which is the lowest since January 1988.
However, they were back to a much more reasonable 11.1MHz by the
22nd. The darkness hour lows averaged 3.9MHz but they were
seriously affected a number of factors. These included aurora,
spread F, other phenomena, complete absorption and attenuation
lasting for up to 7 hours on some days. By the 24th, however,
it appeared that a recovery was under way.

Ionospheric data Scotland N.Ireland

Unfortunately the ionosonde at South Uist was out of action for
the 23rd and 24th, so the data available is only for the period
between the 18th and the 22nd September. Daytime F2 critical
frequencies were depressed as a result of the high levels of
geomagnetic activity and aurora. Although the average level was
7.9MHz, it fell to only 5.4MHz on the 19th, which was the lowest
since September 1988. The darkness hour lows also declined and
averaged 3.5 MHz, with only 2.1MHz on the 19th. There's been
spread F, other phenomena, blanketing E and Absorption lasting
for up to 10 hours on some days - overall, there was no good day
during this period.

And finally the solar forecast. The more active side of the sun
will be facing Earth this week, and solar flux levels may reach
around 280. Geomagnetic levels are expected to be unsettled.
Ionospheric M.U.Fs at equal latitudes are expected to reach 30
MHz in the south and 26MHz. Darkness hour levels should reach
14MHz, but geomagnetic and spread F could affect the north.

Meetings on Monday the 2nd

Basingstoke Amateur Radio Club meets at 7.30 pm at the Forest
Rings Community Centre, Sycamore Way, Winklebury for the annual
general meeting. More information is available from G3ZOI on
0734 332777.

Braintree & District Amateur Radio Society meets at 8 pm in the
Community Centre, Victoria Street for an informal evening. More
information is available from an unidentified lady or gentleman
on 0376 27431.

Southdown Amateur Radio Society meets at 8 pm in the Chaseley
Home for the Disabled, Bolsover Road, Eastbourne for a surplus
equipment sale; booking-in begins at 7 pm. A guest from the
Soviet Union - Igor, UA3QJC - will be present. This is a change
to the advertized programme. More information is available from
G1UND on 0323 504194.

Surrey Radio Contact Club meets at 7.45 pm at the training ship
Terra Nova in The Waldrons, Croydon for the autumn surplus
equipment sale. More information is available from Peter
Burchett on 01-647 9301.

Burnham Beeches Radio Club meets at 8 pm in the Haymill Youth &
Community Centre, Burnham Lane, Slough for an extraordinary
general meeting. All members are asked to attend. More
information is available from G6TSF on 0753 41396.

Meetings on Tuesday the 3rd

Chelmsford Amateur Radio Society meets at 7.30 pm in the Marconi
College, Arbour Lane for the annual general meeting. More
information is available from G4FKH.

Chichester & District Amateur Radio Club meets at 7.30 pm in St
Pancras Hall, St Pancras, Chichester for a junk sale. More
information is available from G1NBX on Chichester 781785.

Meetings on Wednesday the 4th

Cheshunt & District Amateur Radio Club meets at 8 pm in the
Church Room, Church Lane, Wormley for a social evening. More
information is available from G4OAA on 0992 464795.

Aylesbury Vale Radio Society meets at 8 pm in the Village Hall,
Hardwick for a talk on rocket instrumentation and guidance by
G4NUG. More information is available from G4XZJ on 0296 81097.

Worthing & District Amateur Radio Society meets at 7.30 pm in
the Parish Hall, South Street for a discussion evening. More
information is available from G4GPX on Lancing 753893.

Meetings on Thursday the 5th

Vange Amateur Radio Society meets at 8 pm in the main hall of
Barstable Community Centre, Long Riding, Basildon for a junk
sale. More information is available from G3PLF on 0268 524453.

Maidenhead & District Amateur Radio Club meets at 7.30 pm in the
Red Cross Hall, The Crescent in Maidenhead for a junk sale.
More information is available from G8XYN on Maidenhead 25952.

Next Sunday, the 8th of October, the Communications 89 rally and
computer exhibition takes place at Hillhead Camping, Hillhead,
Brixham from 10am onwards. Talk-in will be available via G7FBC,
and the special-event callsign GB4CPU will be on the air from
the rally. Drivers are asked to take care approaching the site
and also to maintain radio silence. More information is
available from G6RZM on 0803 522216.

Meetings on Monday the 2nd

Weston-super-Mare Radio Society meets at 7.30 pm in the
Woodspring Hotel, High Street, Worle for a talk on Indian
railways and local technology by G6TAL. Visitors are welcome.
More information is available from G0KBT on 0934 514429.

Mounts Bay Amateur Radio Group meets at 7 pm in the Diver's

Club, Albert Pier, Penzance at 7pm for RAE and morse class
enrollment. More information is available from G0BBA on 0736
796899.

Meeting on Tuesday the 3rd

South Dorset Radio Society meets at 7.30 pm in the Wessex Lounge
at Weymouth Football Club for a talk on home-brew equipment by
G3SDO. More information is available from G4FJO on Weymouth
781164.

Meetings on Wednesday the 4th

South Devon Radio Club meets at an unspecified location at 7.30
pm. More information is available from PO Box 4, Brixham.

South Bristol Amateur Radio Club meets at 7.30 pm at the
Whitchurch Folkhouse Association, Bridge Farm House, East Dundry

Road, Whitchurch for a computer and audio bring-and-buy evening. More information is available from G4RZY.

Thornbury & District Amateur Radio Club meets at 7.30 pm in the United Reform Church, Chapel Street, Thornbury for a packet radio update by GW1FJI. More information is available from G0FGI on 0454 411062.

Meetings on Friday the 6th

Torbay Amateur Radio Society meets at 7.30 pm in the ECC Social Club, Highweek, Newton Abbot for a club night, More information is available from G4VPM on 0803 39055.

Axe Vale Amateur Radio Club meets at an unspecified time and location for the annual general meeting. More information is available from G0GHH on 0297 33756.

Sleaford & District Amateur Radio Club meets at 8 pm today in Great Hale Village Hall for a radio and general knowledge quiz. All are welcome. More information is available from G3RGO on 0529 303247.

Meeting on Wednesday the 4th

Norfolk Amateur Radio Club meets at 7.30 pm in the Norfolk Dumpling public house in the Livestock Market, Harford, Norwich for a talk on radio navigation systems by G3PDH. More information is available from G4VCE on 0508 78258.

Meetings on Thursday the 5th

Shefford & District Radio Society meets at 8 pm in the Church Hall, Ampthill Road, Shefford for a talk on 50MHz equipment by G8CUB. More information is available from G6RCT on 0707 372211.

Yarmouth Radio Club meets at 7.45 pm in the DFrill Hall, York

Road for a talk on video recorders by G7ATW. More information is available from G3NHU on Yarmouth 721173

First of all, the Vale of Evesham Amateur Radio Club will be running an RAE class at Evesham College of Further Education every Monday evening from this week. More information is

available from G4UXC on 0386 831508.

Meetings on Monday the 2nd

Dudley Amateur Radio Club meets at 7.30 pm in Priory Hall for a
night on the air. More information is available from G4XMT on
09073 5720.

Stourbridge & District Amateur Radio Club's main meeting and
on-the- air nights have been changed around during October. The
club meets at 7.30 pm on the 2nd at an unspecified location for
a film on the work of the RNLI. More information is available
from G4IEB on Stourbridge 392006.

Barr Beacon Radio Club meets at the home of G2AK - 112 Walsall
Road, Aldridge - at 7.30 pm. More information is available from
G1LRP on Walsall 25983.

Meetings on Wednesday the 4th

Telford & District Amateur Radio Society meets at 7.30 pm in
Dawley Bank Community Centre, Telford for an evening on the 430
and 1296MHz bands with the club callsign G3ZME. A morse class
also begins at 7 pm. More information is available from G7BWQ
on Telford 770922.

South Birmingham Radio Society meets at 7.30 pm in an
unspecified location for a talk on the work of the RSGB's VHF
Contests Committee by G4NBS. More information is available from
G0FZO on 021-476 7989. Derby & District Amateur Radio Society
meets at 7.30 pm at 119 Green Lane, Derby for a junk sale. More
information is available from G4FPY on Derby 669157.

Meetings on Thursday the 5th

The Amateur Radio Club of Nottingham meets at 7.30 pm in the
Sherwood Community Centre, Woodthorpe House, Mansfield Road,
Sherwood for a forum and evening on the air. More information
is available from G1WBZ on 0602 733740.

Mansfield Amateur Radio Society meets at 7.30 pm in the Polish
Catholic Club, Windmill Lane, Mansfield for a talk on
high-voltage power supplies by G4ZZG. More information is
available from G4AAM on Mansfield 642719.

Meeting on Friday the 6th

Coventry Amateur Radio Society meets at 8 pm in Baden Powell

House, 121 St Nicholas Street, Radford for the annual general

meeting.   More information is available from G4HHT on Coventry
610408.

Meetings on Monday the 2nd

Woodford Ratec Amateur Radio Club meets at 8.15 pm in the
British Legion Club, Moor Lane, Woodford for a talk on Boolean
algebra and circuit design by G4RLD. More information is
available from G4SFU on 061-485 3912.

Carlisle & District Amateur Radio Society meets at 7 pm in the
Morton Community Centre, Carlisle for the annual general
meeting. More information is available from G3XWA on 0228
27>63.

Scarborough Amateur Radio Society meets at 7.30 pm in
Scarborough Cricket Club, North Marine Road for a surplus
equipment sale. More information is available from G4ZNZ on
Scarborough 514767.

Meetings on Tuesday the 3rd

Wakefield & District Amateur Radio Society meets at 8pm in the
Community Centre, Prospect Road, Ossett for an evening on the
air and talk on the construction and use of an RF probe by
G1WXJ. More information is available from G1XYT on Leeds 872059

Todmorden & District Amateur Radio Society meets at 8 pm in the
Queen's Hotel, Todmorden for a junk sale. More information is
available from G0AEL on Halifax 882038.

Meetings on Wednesday the 4th

Wirral Amateur Radio Society meets at 8 pm at Ivy Farm, Arrow
Park Road, Birkenhead for the annual general meeting. More
information is available from Alex on 051-644 6094.

Congleton Amateur Radio Club meets at 7.45 pm in the Congleton
Youth & Community Centre, Jackson Road, Congleton for the annual
general meeting. More information is available from G4YKI on
Congleton 275358.

Hornsea Amateur Radio Club meets at 7.30 pm at the Mill in Attic
Road, Hornsea for a rig check evening. More information is
available from G4IGY on 0964 533331.

Meetings on Thursday the 5th

Houghton-le-Spring Amateur Radio Club's normal meeting has been
cancelled. Members are asked to go to Kepier Hall in
Houghton-le- Spring any time from 6 pm onwards to assist with
setting-up of the special-event station GB6HF. More information
is available from G0ABF on 091 584 4673.

    Spen Valley Amateur Radio Society meets at 8 pm at Old Bank
    Working Men's Club, Mirfield for a surplus equipment sale. More
    information is available from Russell on 0274 875038.

    St Helens & District Amateur Radio Club meets at 7.30 pm in the
    Community Resource Centre, College Street, St Helens for a talk
    on home construction by G3RJV. More information is available
    from G0CXT on 0744 819258.

Meeting on Friday the 6th

    South Manchester Radio Club meets at 8 pm in the Sale Moor
    Community Centre, Norris Road, Sale for a contest preparation
    evening. More information is available from G4BZO on 061-231
    5870.

    The Orkney Group meets at 7.30 pm on the 4th of October in the
    Lynnfield Hotel, Kirkwall for a slide and tape lecture on
    antennas for DX. More information is available from GM4IOB or
    GM3IBU.

    The West of Scotland Amateur Radio Society meets at 7.30 pm on
    the 6th of October at 29 Old Dumbarton Road, Glasgow for a talk
    on the work of John Logie Baird by Dr. Peter Waddell. More
    information is available from the club secretary on 0360 310766.

    Swansea Amateur Radio Society meets at 8 pm in Room 303 of the
    Applied Sciences Building at University College for a talk and

demonstration of computing in amateur radio by GW4KAW and
GW1YSJ. More information is available from an unspecified lady
or gentleman on 0639 815437.

Carrickfergus Amateur Radio Group meets at an unspecified time
and venue for the first night of a course in basic electronics
conducted by GI3YRL. More information is available from GI0JOF
on 09063 66474.

Bangor & District Amateur Radio Society meets at 7.30 pm on
Friday the 6th of October. The venue is Bangor Rugby Club,
Bloomfield Road, and there will be a talk on home-brew
transmitters by GI0EZD. More information is available from
GI4OCK on Bangor 454049.

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   ::   HamNet Electronic Edition    ::
   ::  CompuServe's  Ham/SWL Forum   ::
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Up to the minute news from the worlds of amateur radio, personal
computing and emerging electronics. While no guarantee is made,
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IMPORTANT Note: Some of the material included in The W5YI Report
- Electronic Edition may not be suitable for transmission via
Amateur Radio.

In this issue:

- ARRL Files for Code-Free Ham Class

HamNet thanks Fred Maia, W5YI, for permission to excerpt this
Electronic Edition of his W5YI Report. The full ten-page
biweekly newsletter is available by mail for $23 per year from
Fred at Dept. C, PO Box 565101, Dallas, TX 75356-5101. Samples
available for a 2 stamp large SASE.

Do you have Amateur Radio news to contribute to The W5YI Report?
If so, please call (817) 461-6443 and leave a message on Fred's
recorder!

o ARRL Files for Code-Free Ham Class!

"The League has carefully researched and evaluated this subject.
It is not one which yet enjoys universal acceptance in the
amateur radio community. It is, however, one which the League
now supports as beneficial to the future, short and long term,
of the Amateur Radio Service. The only way the plan can fail is
if the Amateur Service rejects the Communicator class licensees
as full-fledged members. This the League firmly believes will
not occur, as the Amateur Service has a tradition of mutual

assistance, and guidance of newcomers by the more experienced
members. Newcomers will strengthen the Service. Once and for
all, those who have a true interest in becoming radio amateurs
will have the opportunity to join, unfettered by unfounded
perceptions about entry barriers. They will not only have the
opportunity to become amateurs, but will also have a more
favorable exposure to the benefits of having a personal,

cognitive communications skill, which is shared worldwide in the Amateur Radio Service. The learning of Morse code should be viewed more as an opportunity than as a burden, or a hurdle over which they must jump." (Excerpt from ARRL Petition for Rulemaking)

As expected, the American Radio Relay League submitted a Petition for Rule Making to the Federal Communications Commission on August 31 seeking "Establishment of a Class of Amateur Radio Operator License Not Requiring a Demonstration of Proficiency in the International Morse Code."

The League proposed a new sixth class Communicator license offering specific, limited privileges on amateur frequencies above 220 MHz. There was no mention that these privileges would actually be above 222 MHz since the FCC reallocated 220-222 MHz to the Land Mobile Service.

The filing came a little more than a month after League officials, meeting at their July board meeting, voted to seek a ham ass which did not require knowledge of Morse code. The vote was not overwhelming in favor of a code-free ham class. Nine directors were in favor; six opposed.

The Board not only considered the views of its members but also the recommendations of a special study committee which for months had gathered information on the subject and rendered a comprehensive report (See 4/15/89 W5YI Report). That Committee was comprised of representatives of the Amateur Radio industry, League elected representatives and individual amateurs. They reached four basic conclusions:

(1.) there is a perception that the code proficiency element of the amateur entry level examination is a significant barrier;

(2.) ...the code proficiency requirement does not act as an appropriate filter to weed out undesirables;

(3.) ...there are many good reasons for maintaining code proficiency;

(4.) ...there is nothing antiquated or irrelevant about the code "but this is a matter that some individuals must learn for themselves, in order to appreciate the relevance."

The Board adopted a lightly more conservative proposal than the Committee recommended. The League said the changes reflected the input received from the amateur community. It appeared

overall that the attitude of amateurs was significantly more
favorable toward a codeless amateur license than in 1983.

The well researched and prepared petition was authored by League
attorney Chris Imlay, N3AKD, and comprises some 25 typewritten
pages. It also contained a very interesting history of the
no-code ham movement in the United States.

The Communicator Class

The ARRL maintains that the Communicator class ticket is not an
entry-level license in the same sense as the Novice class
license. Earning the new codeless license would require the
applicant to pass a written examination somewhat more
comprehensive than the present Technician class theory
examination, including some questions relating to Morse Code,
but without a Morse receiving, sending or recognition
requirement. The code questions would be on the tradition and
utility of the Morse code.

Three accredited volunteer examiners from the VEC System would
administer the examination, and upgrading to a Technician class
of license similarly would involve taking a five-word-per-minute
code examination similarly administered. "The need for absolute
security, and the perception of the same, is critical not only
to the success of the program in fact, but also to its
acceptance among present licensed amateurs. The amateur
community must be convinced that the new licensees obtain their
licenses through a highly monitored, publicly administered
examination program, in order that it avoid and be perceived to
avoid, compromise. The license carries with it privileges not
available to Novice licensees, and as such is properly included
in the VEC program."

"There should be an upgrade path from the Communicator class of
license to the present Technician license by way of a
five-word-per- minute Morse code examination element,
administered through the established Volunteer Examiner system>
The petition clearly states that all Communicator and Novice
licensees would have to be retested under the VEC program at 5
WPM code before they could qualify for a Technician ticket.

"No credit for element 1(A) shall be afforded those seeking a
Technician class operator license on or after the effective date
of the Communicator class operator license by virtue of the
possession of an unexpired license which incorporates that
element." It will be interesting to see what Novice level and
VEC System examiners think of that proposal.

ARRL said Communicator applicants would be required to pass the
current 30 question Novice written test element 2 and a beefed
up 30 question Technician element 3(A) written examination to
obtain a Communicator license. The present element 3(A)
contains 25 questions. The additional five questions would be

on: Amateur digital communications techniques (3 questions) and
two questions on the use and application of Morse code.

It is unclear if this would require increasing the nine
examination topics to eleven to insure their inclusion in
written tests or whether these questions could be added to the
existing "operating procedures" and/or "signals and emissions"
subelements. Specific questions merely added to existing
subelement pools need not be asked in all examinations.

Communicator privileges would be all amateur frequencies and
authorized modes above 220 MHz, at a maximum output power of 250
watts. "There is a perception that the VHF bands below 220 MHz
are overcrowded, or are otherwise inappropriate for Communicator
use. The League ascertained that there exists a great deal of
acceptance of a code-less amateur license if the privileges were
limited, as proposed, to frequencies above 220 MHz."

The ARRL also believes "...there should be a strong incentive
(such as the attainment of 2 meter privileges) for codeless
licensees to upgrade their license class." A Communicator
licensee may not be a control operator of a repeater or
auxiliary station. With respect to power levels, the League saw
no need to permit the Communicator class licensee to operate at
greater than 250 watts PEP output, given the frequency bands
available. "...greater power can be reserved for higher-class
licensees, so as to create the incentive to upgrade."

Call signs would be assigned from the Commission's Group D
block; 2 prefix letters, one call sign region number and three
suffix letters. "This is most important, as the goal of a

codeless amateur license is to bring such licensees into the
'mainstream' of the Amateur Radio Service, and to encourage them
to upgrade their license class. It is thus important not to
'label' these licensees as distinct from other entry-level
amateurs, or to attach a stigma to the license class."

The League acknowledged that adding a sixth amateur class to an
already complex licensing structure adds somewhat to the burden
of the volunteer examiner program, which has thus far performed
extremely well. ARRL directors asked their officers to examine
the amateur licensing structure as part of their long-range
planning effort. Overall, it was determined that the advantages
of implementing a new license class now - outweighs the
disadvantages, taking into account the desire of many amateurs
and prospective amateurs to open this additional gateway to
amateur radio.

No-Code Background

The ARRL said the current resurgence in the debate about the
creation of a codeless amateur license is interesting, given the
fact that it is a subject that has been repeatedly considered
over a span of years.

     In 1974, in Docket 20282, the FCC considered the possibility of
     a codeless amateur license which the League indicated it could
     support. The "Basic Amateur" license class was to have included
     Novice theory and a "code recognition" but not a code text
     copying requirement. Five years later the FCC closed the matter
     without action stating they required current amateur thinking on
     the issue in a separate proceeding.

     1978's Docket 78-250 proposed a new class of amateur operator
     license without a Morse code proficiency requirement which would
     be restricted to handicapped persons. It too was dropped when
     handicapped amateurs generally did not desire special treatment
     in the substance of amateur examinations. Rather, they merely
     asked that examiners take into account their specific needs in
     procedural aspects of examination administration. The FCC
     adopted this position and that policy continues to this day.
     (See 97.509)

     Prior to the 1979 World Administrative Radio Conference, Article

41 of the international radio regulations did not require Morse
code knowledge if the amateur operation was exclusively above
144 MHz. The ARRL said the United States WARC-79 delegation
disregarded the recommendation of the FCC convened Advisory
Committee for Amateur Radio (ACAR) and other public comments
which suggested no changes to Article 41.

Surprisingly, the United States WARC delegation proposed to drop
the international requirement of Morse code proficiency for
operation below 144 MHz in favor of a 'recommendation' that the
various countries of the world have such a requirement. The
U.S. proposal was defeated by the WARC conferees. The ITU
Radio Regulations were ultimately changed, however, to require
Morse code knowledge for amateur operation on frequencies below
30 MHz, instead of 144 MHz. Only the 50-54 MHz band was
affected by the action.

The League said that event was received extremely negatively by
the amateur radio community at a time when the FCC was actively
considering a codeless amateur license in the United States.
"...it is not surprising that there existed a strong distrust of
the Commission on the subject."

The early 1983 release of Docket 83-28 coincided with fiscal and
manpower problems at the FCC. The Commission's examination
system "...was in great disrepute, and frankly in disarray," the
ARRL said. Even so, the FCC proposed on its own initiative two
codeless license alternative: (1.) the elimination of the Morse
code examination element from the Novice class license or (2.)
the creation of an entirely new class of license involving a
written examination aimed primarily at digital communication
techniques.

Without referring to Dick Bash/KL7IHP by name, the ARRL
discussed the negative aspects of "at least one firm" publishing
study aids which included the exact questions contained in the

FCC license exams. The perception was, according to the League,
that the Morse code test was the only portion of the amateur
radio examination that meant anything at all.

To solve the written examination problem, the Congress, in 1982,
enacted Public Law 97-259 to allow the Commission to utilize
volunteer examiners in the Amateur Service. The eventual result

was a question pool system from which examiners would draw
certain questions according to a formula to prepare their
written examinations. To eliminate applicants from "shopping"
for easier examinations, the VEC's ultimately agreed among
themselves that they would all use exactly the same answers and
multiple choice answer formats verbatim.

The ARRL said the volunteer examiner system was not yet in place
in 1983 and "...it was not clear whether a private sector
examination plan was feasible, much less sufficiently secure to
prevent cheating." For this (and other) reasons, the amateur
community thus rejected the Commission's 1983 codeless license
proposal by a ratio of twenty to one. The Commission terminated
the proceeding without action in December of 1983.

Novice Enhancement

The League maintains the "enhanced" Novice class privileges have
been a great success in terms of reducing attrition and
encouraging upgrading. "What the increase in Novice privileges
has not accomplished, however, is to increase significantly the
overall rate of influx of new Novices in the Amateur Service.
The relatively flat rate of increase in the number of new
amateurs since the 1987 'Novice Enhancement' proceeding once
again has fueled the debate about a codeless entry level amateur
license. There is a desire among amateurs for growth in the
Amateur Radio Service, and a desire to reveal to more people the
benefits and opportunities of the Service." The ARRL
acknowledged the perception that the Morse code requirement is a
barrier to amateur radio entry and creation of a codeless
license might attract newcomers.

Conclusion

The League believes "...provided that the Commission avoids the
mistakes of administrations which have enacted unsuccessful
codeless license classes, and follows the guidance of those
which have enacted successful ones, the creation of a codeless
amateur license should be successful here as well. The key
ingredients seem to be a substantial written examination,
significant incentives to upgrade, provisions for including
codeless licensees in the on-air activities of other licensees
and assimilating them into the mainstream of amateur radio."

ARRL "respectfully requests that the Commission at an early
date, release a Notice of Proposed Rulemaking, proposing the
creation of a Communicator class amateur operator license..."

Now What Happens?

The ARRL no-code petition will be placed on official Public
Notice - probably this coming week, along with 11 other related
petitions that propose different types of no-code license or
other changes in the licensing structure or operator privileges
or regulations. (One fellow wanted to change code speeds).

Each will be assigned "RM" (Rule Making) serial numbers. These
numbers are issued out of the (FCC) Office of the Secretary.
The FCC has just received some additional no-code petitions and
these will be considered to be comments on the existing
petitions.

The Public Notice will begin a 30-day period during which time
interested persons may file comments telling the FCC why they
think any or all of the petitions should or should not proceed
to the rule making stage. The idea here is to enable the FCC to
determine preliminary public reaction to the proposals. If
there is vehement opposition the FCC could well decide that the
proposal should not go forward. Similarly, if there are
substantial expressions of support, the FCC will know that there
is merit to the idea and will likely proceed.

Following this comment period there will be a short reply
comment period in which people on each side of the issues can
answer the points raised by their opponents. After this
exchange of views, the FCC will decide whether to proceed to
rule making.

It is important to note that if the petitions get RM numbers, it
means that the FCC has made the preliminary decision to go
forward. It has the power to dismiss the petitions out of hand
and it will do so if it does not wish to proceed. Also the
assignment of an RM Number in and of itself represents a first
positive step toward a no-code license.

The comments at the RM stage are NOT the place to get into a
debate about the particulars of the proposals. The comments,
either in favor or in opposition, need only manifest the
ultimate position of the commenting person or group.

In other words, there will be time enough to argue about whether
the no-code license should include privileges at 2 meters. The
important thing is to let the FCC know one's position on the
ultimate issue: whether you are in favor of some form of no-code
license or not.

The preliminary round of comments at the RM stage is not just a
formality. However, in view of the ARRL's filing, one has to
believe that the matter will proceed to rulemaking. The ARRL
does not file trifling petitions. Moreover, this matter is
strictly internal to amateur radio, and on such matters the FCC

pays great deference to the desires of the League. So if the
ARRL wants a no-code license, it is likely to get it.

The Commission staff is supposed to take preliminary comments
into account when deciding whether to grant the Notice of
Proposed Rulemaking (NPRM) desired by the petitioner. Many
petitions never receive RM numbers because they are judged to be
repetitive, frivolous or otherwise not deserving of serious
consideration. Most, but not all, of the petitions that do
receive RM numbers will eventually make it to the NPRM stage.

The FCC's Personal Radio Branch has a small staff and budget for
the large amount of work they have to do in researching
petitions, drafting rules, working on enforcement cases,
monitoring the VEC program, ...and the like.

For this reason, Branch Chief John Johnston/W3BE told us
informally that he thought amateurs ought to hold their comments
until the NPRM stage: "We're not really looking for comments on
these items. It would just slow things down to throw in
comments at this phase. It would be better to wait until a NPRM
to file comments. We still have a pile of other petitions to
work on, some that people have been waiting a long time for.
While we were working on the Part 97 rewrite, the hams kept on
thinking of things to do."

Following the preliminary round of comments, the FCC will decide
whether to proceed. The next thing that will come out will be
either a Memorandum Opinion and Order, killing the proceeding
(once the RM number is assigned, the FCC can no longer dismiss
it out of hand; it must explain why it changed its mind); or a

Notice of Proposed Rule Making (NPRM).

if the FCC issues the NPRM, it will represent the FCC's first
cut at what the no-code rules and privileges look like. (The
Commission could also issue a Notice of Inquiry which seeks more
information, but this path of action is extremely doubtful).

The NPRM will be a distillation of all of the suggestions
contained in the various petitions, plus anything useful that
might have been said in comments. This is where the heavy
analysis comes in. This is where the particulars are hammered
out: what bands; what privileges; ...what testing requirements.
We expect a Notice of Proposed Rulemaking will consolidate some
or all of the petitions within the next six months - although it
could happen by Christmas. n other words, the FCC will not
release 12 different no-code NPRM's. Instead, a single no-code
NPRM will emerge, possibly accompanied by NPRMs dealing with
rules other than the Morse code requirement. This scenario is
only speculation on our part. FCC staff are keeping their plans
confidential.

In any event, don't expect fast final action by the Commission.
Rule making takes time. Even if this matter is put on a fast
track for decision, a no-code license is probably still a year

off.

    FIRESIDE CHAT MAY 1989
    Woody Linwood WR0S

    This month I wish to address an issue which has proven to be
    extremely emotional, no code licenses.

    The government is again considering offering a no-code amateur
    radio license, even though the proposal had been voted down a

few years past. If you have read any of the amateur magazines,
computer bbs', or just listened on the bands you'd have heard
the pro'ers and the con'ers each hollering at each other about
being closed minded and expounding the virtues of each position
and the negatives of the opposing side.

At age 34, I am nowadays a member of the ARRL Old Timers Club
(as I was first licensed "way back" in 1966). Supposing that
this "vintage" status makes me somehow qualified to speak I will
state my position.

My position is as follows:

1. Amateur radio is technical sport. In theory it requires
some level of technical competence. How is it that, for
example, many hams who solely stick on the VHF bands don't know
what impedance antenna should be plugged in to the backs of
their two-meter radios? Do they have any interest in any facet
of amateur radio except asking hubby or wife to bring eggs home
from the store? General chit chat? Where is the competence in
that? The formulas for "easy licensing" have seriously affected
the "technical pool" of experimenters we have to draw from.
Hams have pioneered spark, CW, AM, SSB, packet, and even fiber
communications. We don't collect postage stamps as a hobby...
we are technical amateurs (experimenters, communicators, etc).
Persons who make a sport of stamp collecting do better at
studying their hobby than most of today's hams. Some people
state that other countries have successfully offered no-code
amateur licenses. Pondering the facts, though, it appears that
no code in those countries may be more beneficial than in
America as they don't have the same ability to simply memorize
questions and answers to bypass real knowledge requirements. As
in so many areas of American life, a certain element of our
society wants Amateur privileges issued just because they're
fine folks. Since the early 1970's I have perceived a decline
in the technical competence in the licensed amateur. Methods
which allow for answer memorization defeat the written
examinations. Have you ever wondered why the FCC deleted the
requirement for Commercial Radiotelephone Licenses in the
commercial segment? Maybe because the ability to simply
memorize Q & A's defeats the real proof of technical competence
once associated with First and Second Class commercial tickets.
When was the last time you honked a friendly toot when you saw a
ham with amateur radio license plates? What has caused the
deterioration of the amateur fraternity? The morse code
requirement stands as sole proof of the expenditure of real
effort. But what is the value of that code if it is not used?

2. Morse code as a valuable communications tool? Yup, you bet.
In the day of "high tech" packet and SSB communications there
are reasons why we should still require 19th century technology.
I am a Field Engineer for AT&T. My job requires understanding
of today's technology. Are you impressed? Yah, right. Well I
am equally unimpressed by all this wowwy-zowwy technology as
being the answer to retiring CW from VHF licensing. As pointed
out by another AT&T engineer to me recently, CW has the ability
to be interpreted by your human ear. Can you do that with 300
baud packet or 60 wpm rtty? Even when terrible band conditions
preclude effective SSB and, yes, even packet technology your
human ear can pull the hand sent dits and dahs from the mud.
Until mechanical machines can put rational interpretation into
transmission modes copied through woodpeckers, QRM, QRN, QSB,
and just flat bad conditions CW is still best for getting
through when nothing else will. Also, American packet today
still QSO's in common English. Those who blow off CW can miss
QSOs with Europeans and Asians who do not speak or type English.
Another "rational" reason? Backpacking in the Rockies, you can
still take your HW8, battery, and code key and have hours of
fun. Although not heavily used above 30 mHz, CW bands at HF are
usually always crowded. Does that indicate a dying art? Nah.
And, yes, it does still take practice and skill. Something that
requires real effort. Something that infers an interest in the
ART of communications, not just silly yakking.

3. Do we want the numbers just for the sake of having numbers?
Although it does open a marketplace for amateur equipment,
numbers just for the sake of numbers is dumb. Those that claim
no one has any "pecuniary interest" in the desire for added
numbers may be deluding themselves but not anyone else who has a
half an ounce of common sense. Many of these no-coders state
that studys show the average age of the amateur population is
aging. That is a crock. Let's review these "studies", let's
see how well they stand up to rational factual scrutiny.
Explain then the schools that advertise to get equipment
donations?

4. No code supporters say we need more hams to help with
emergency communications and public service. Having persons
with no pride in their sport is bad for that sport. Have you
heard a severe weather net in the past few years that has not
been jammed? When the tornados were on the ground in Denver in

June of 1988, the net had to be moved due to jamming. And the
jammer followed. Remember the HF hurricane nets (also in 1988)?
A lot of havoc was caused by jammers. Stupid... just plain
stupid. When the CB'ers started REACT it was a valid tool for
community service. What was it's major downfall? Yup, you
guessed it... jammers. What's the difference?

In conclusion, there are several pro's and several con's to both
sides. When you read arguments on both sides, try to put aside
your prejudice and emotions and look at the facts. It is true
that when someone is given something for nothing they tend to

not respect it as much as there was no sweat put in to it's
acquisition.

The bottom line facts are:

1. Ham licenses can be had by simple Q&A
    memorization. The written exam no longer
    is proof of technical competence (or even
    interest!).

2. The introduction of non-technical mom & pop
    users is not an asset to the amateur community.
    It does nothing to further the "sport" of
    electronics and communications experimentation
    or art. Nor does it necessarily equate to
    enhanced emergency or public service
    communications.

3. People that state "as fact" that the average
    ham radio population is aging are hard pressed
    to prove their position by any basic scientific
    means. A quick review at hamfests and seminars
    would suggest otherwise.

4. Those that state that "we need more amateurs"
    are wrong. Plain and simple, quantity is NOT
    quality. Listen to any number of emergency or
    public service nets and judge for yourself.

5 . About the only REAL service provided by pouring
    non-technical hams into the amateur radio service
    is that, due to simple bulk quantity demands for

VHF equipment, the prices would drop (much as CB's
        did through the 1970's and 1980's).

A possible compromise could be to give the no-code ragchewers
900-mHz and up. Then they can have their repeaters and
satellites along with the ability to carry on packet, fast scan
TV, and "experimental" activities.

Leave VHF for those with proven electronics interest. Leave HF
for those with electronic competence so they can properly
represent America to the international community. Let's be the
LEADERS in something! How about leading the way to amateur
radio competence?

Give the FCC monies to properly police the HF, VHF, and UHF
spectrums and then give them the teeth to prosecute offenders
effectively.

Then let the amateur community recover 11-meters as a CW only
band.

Good idea, huh? Your thoughts?

HR2510 RIT-control mods

by Dave Schmarder, N2DS.

...In my recent quest to find mods for the Uniden HR2510
10-meter rig I received a lot of inqueries into my findings, so
here it goes - the first real 'mod' I've found for the HR2510.
My thanks to Dave, N2DS for supplying the information and
original notes on his mod. (Dave can be contacted at the N2EZG
pbbs).

"...I bought one several months ago and found that the RIT
control didn't work the way I wanted it to. The problem is
that the TX and RX are unlocked from each other and if you wish
to transceive, you had better make sure that the control is in
the right position. I decided that it wasn't suitable that
way, so I locked the transmit with the receive. There were two
problems that arose when I did the mod. The TX and RX
frequencies on USB were shifted by about 50hz or less,
noticable, but not serious. We all operate USB on 10 anyway,
but could cause difficulty on RTTY/AMTOR. The other problem

was that on CW, you would have to zero beat the station to be on his frequency. I solved that by placing a relay circuit in the line to return the RIT to original operation on the CW mode. I am sending you the original notes concerning this to pass along."

...And here are the notes:

1. Remove cathode end of D150 from circuit board. Connect two wires, 1 of each to cathode of D150 and to where the cathode used to go in the board.

2. Connect other ends of these wires to the N.O. Contacts of the relay.

3. Find & clip ORANGE wire going to board near D119. Leave enough wire to board to connect new wire. Solder ORANGE wire removed to the common contact of other side of DPDT relay.

4. Connect wire from where that orange wire went (near D119) to N.O. contact of the DPDT relay (same side as orange wire went).

5. Connect wire to where RED wire near D172 is connect. This added wire is connected to the N.C. contacts on relay on the same side as the orange wire.

6. Connect free end of 2.7ohm resistor to VIOLET wire near D176.

7. Connect emitter of 2N3904 to black wire near D160

8. Connect wire from relay and cathode of 1N4148 to red wire near D154.

                            -- Packet Gripes #1 --
                          The Problem With Digipeaters
                             Tom Clark, W3IWI
                             16 December 1986

     I am sitting here in the shack feeling very frustrated. I am
     watching the activity on 145.01 (although the problem is just as
     severe on 145.05 or any of the other frequencies in use in the
     area) watching WA4xxx tying up the frequency for the greater
     portions of Northern VA, MD, WVA and EPA, trying to connect with
     a BBS in Pittsburgh using SIX! digipeaters. He is having no
     luck and undoubtedly is wondering why. The basic answer is very
     simple:

          PACKET RADIO DOESN'T WORK THRU MORE THAN 2 or 3 DIGIS !!!
          ====== ===== ======= ==== ==== ==== ==== = == = ===== ===

     Oh yes, I hear you saying "You are wrong -- the AX.25 protocol
     permits me to use up to eight digis!". That is a true
     statement, but just because something is permitted doesn't mean
     it will work. And here is why --

     Assume that you are station ABC at one end of a long string of
     digi's trying to send out a packet thru digis DEF, GHI, JKL,
     MNO, PQR, STU and addressed to station XYZ (fake calls are used
     to protect the guilty!). Thus your intended path is expressed
     by the following connect command

                    CONNECT XYZ VIA DEF,GHI,JKL,MNO,PQR,STU

     Your outgoing packet then should take the path

     ABC => DEF => GHI => JKL => MNO => PQR => STU => XYZ

     At every step along the way, there is a finite chance that the
     packet is going to be hit by QRM. My observations are that on
     the very best paths about 5% of packets get clobbered on any
     single hop. For the example we are using, this means that 95%
     of the ABC => DEF packets make it to DEF, and then 95% of them
     successfully navigate the DEF => GHI path, and so forth. Thus
     at the destination XYZ we have

.95 * .95 * .95 * .95 * .95 * .95 * .95 = .70

    Only 70% of the data you sent out makes it all the way to XYZ.

    BUT WAIT -- THERE'S MORE !!!!

    AX.25 packet protocols require XYZ to send you back an 'ack'
    acknowledgement packet which then has to unwind itself back thru
    the same route. The same probability arguments apply, and 70%

    of the acks get to you. Thus on a high- quality 95% link thru 6
    digis, only .7 * .7 = .49 of your packets are successful thru 6
    digipeaters! A Las Vegas gambler could make a very good living
    on 51/49 guaranteed odds.

    BUT WAIT -- THERE'S MORE !!!!

    We took 95% as the probability of each link working. I know of
    very few paths that are that good except perhaps at 4AM when
    nobody else is on the frequency. Links you tend to think of as
    'pretty good' probably have 10-20% of your packets trashed on
    any given hop. And I know of a number of links where the
    probabilities are no better than 50%. For the general case, if
    P is the link probability on all links, and N digipeaters are
    involved, then PA = the aggregate probability of success will be
    given by the formula

    $PA = (P) ** (2N+2)$

    BUT WAIT -- THERE'S MORE !!!!

    Every time your packet gets clobbered, you try again to push it
    thru. If 50% of you packets get hit, on average you will
    try/retry your packet 2 times. In general the number of
    tries/retries that will be required is

    $TRIES = 1 / PA$

    BUT WAIT -- THERE'S MORE !!!!

    You and everybody else who is on packet spent a lot of money to
    be able to ragchew and send messages (or data, or nudie

pictures, or ???) at 1200 baud. But the packet gurus lied to
you. Your data doesn't really flow at 1200 baud -- there is
some overhead associated with headers that are appended to each
and every packet you send, plus some time wasted in getting that
all important ack back, plus some time for your radio to change
from transmit to receive and back to transmit, plus time waiting
for a hole to open up on the channexDl. At best you can
transmit say 600 baud. But for every digipeater you use,
another set of similar delays is added at each step along the
way. So if you had a perfect set of links thru N digis, your
average baud rate would drop to something like

DIGIPEATED BAUD RATE = 600 / (1 + N)

BUT WAIT -- THERE'S MORE !!!!

Each time your packet gets clobbered, it is retried, until it
gets thru (or until you time out). So the real effective baud
rate is slowed even further until it is given by this formula

EFFECTIVE BAUD RATE = 600 * PA / (1 + N)

= 600 * [(P)**(2N+2)] / (1 + N)

BUT WAIT -- THERE'S MORE !!!!

Every time you take over the channel with an unsuccessful
packet, somewhere along the chain you have prevented some other
hapless individual from using that time slot. YOU HAVE HOGGED
THE FREQUENCY!

We might express your channel usage efficiency as the ratio of
the baud rate that you actually to the baud rate you would have
achieved if you had simply used a piece of wire, i.e.

EFFICIENCY = EFFECTIVE BAUD RATE / 1200

More instructive than seeing this factor as a simple numerical
ratio is to express it in dB as what I like to call the 'Hog
Factor' --

HOG FACTOR = 10 log (EFFECTIVE BAUD RATE / 1200)

This factor even includes the 3 dB 'loss' for a perfect AX.25
link due to the overhead we discussed earlier.

BUT WAIT -- THERE'S MORE !!!!

So far I have only used a few numbers to introduce the concepts.
The following four tables tell the whole story. I have worked
out a number of cases for links ranging from perfect (P=1.0) to
pretty scuzz-ball (P=0.50) and for 0 thru 8 digipeaters. My
experience shows that P=0.95 is a pretty rare case, but outside
of 'prime-time' hours P=0.90 is fairly typical. In the evenings
when everybody is on the channel P=0.80 is not unusual. Paths
involving 'DX' digipeaters (like K3LZ-1 or WB4APR-6 or WA4FRB-3)
degrade to P=0.6 or P=0.7 in the evenings simply because they
hear so much stuff. And we always have the user in a poor
location, running an HT with a rubber duckie who is lucky to
have P=0.5!

My advice to all users is that they not even attempt to use a
path for which PA < 0.5 (or on average < 2 retries). I have put
those 'bad' combinations in parenthesis to highlight them.
Unless you have an exceptional path (better than P=0.95), these
tables clearly show that using more than one or two digipeaters
is an exercise in futility which will make you very unpopular
with your peers ('Hog Factor' poorer than -10 dB) and drive you
to distraction (with effective baud rates slower than about 100
baud). Have I proven my premise from the start of this tome?

PACKET RADIO DOESN'T WORK THRU MORE THAN 2 or 3 DIGIS !!!

            <------ Link Success Probabilities Per Hop ---------->

N =	P=1.0	P=.95	P=.90	P=.85	P=.80	P=.70	P=.60	P=.50
No. of	====	====	====	====	====	====	====	====
Digis								
----	----- PA = Aggregate Probability of Success --------							
0	1.0	0.90	0.81	0.72	0.64	(0.49)	(0.36)	(0.25)
1	1.0	0.81	0.66	0.52	(0.41)	(0.24)	(0.13)	(0.06)
2	1.0	0.74	0.53	(0.38)	(0.26)	(0.12)	(0.05)	(0.02)
3	1.0	0.66	(0.43)	(0.27)	(0.17)	(0.06)	(0.02)	(0.00)
4	1.0	0.60	(0.35)	(0.20)	(0.11)	(0.03)	(0.01)	(0.00)
5	1.0	0.54	(0.28)	(0.14)	(0.07)	(0.01)	(0.00)	(0.00)

```
6    1.0  (0.49) (0.23) (0.10) (0.04) (0.01) (0.00) (0.00)
7    1.0  (0.44) (0.19) (0.07) (0.03)  (.00) (0.00) (0.00)
8    1.0  (0.40) (0.15) (0.05) (0.02)  (.00) (0.00) (0.00)


   ---- Average number of Tries/Retries before Success ----
0    1.0    1.1    1.2    1.4    1.6   (2.0)  (2.8)   (4)
1    1.0    1.2    1.5    1.9   (2.4)  (4.2)  (7.7)  (16)
2    1.0    1.4    1.9   (2.7)  (3.8)  (8.5)   (21)  (64)
3    1.0    1.5   (2.3)  (3.7)  (6.0)   (17)   (60) (256)
4    1.0    1.7   (2.9)  (5.1)  (9.3)   (35)  (165)
(1,024)
5    1.0    1.9   (3.5)  (7.0)   (15)   (72)  (459)
(4,096)
6    1.0   (2.1)  (4.4)  (9.7)   (23)  (147) (1,276)
(16,384)
7    1.0   (2.3)  (5.4)   (13)   (36)  (301) (3,545)
(65,536)
8    1.0   (2.5)  (6.7)   (19)   (56)  (614) (9,846)
(262,144)


  -- ------- Equivalent System Baud Rate ----------------
0    600    542    486    434    384    294    216    150
1    300    244    197    157    123     72     39     19
2    200    147    106     75     52     24      9      3
3    150    100     65     41     25      9      3      1
4    120     72     42     24     13      3      1    0.1
5    100     54     28     14      7      1    0.2   0.02
6     86     42     20      9      4      1    0.1   0.01
7     75     33     14      6      2    0.2   0.02  0.001
8     67     26     10      4      1    0.1  0.007 0.0003


  -- -------- Channel 'Hog factor' in dB ----------------
0     -3     -3     -4     -4     -5     -6     -7     -9
1     -6     -7     -8     -9    -10    -12    -15    -18
2     -8     -9    -11    -12    -14    -17    -21    -26
3     -9    -11    -13    -15    -17    -21    -27    -33
4    -10    -12    -15    -17    -20    -25    -32    -40
5    -11    -13    -16    -19    -22    -29    -37    -47
6    -11    -15    -18    -21    -25    -33    -43    -54
7    -12    -16    -19    -23    -28    -37    -48    -60
8    -13    -17    -21    -25    -30    -40    -52    -67
```

VITA Help Needed!

Volunteers in Technical Assistance (VITA) in Arlington, Virginia
is creating a small pool of talent in packet radio network
layout, installation, and evaluation in international
situations.

Currently, we are looking for individuals with experience and/or
language skills for projects in eastern Europe (particularly
Hungary, Poland, and Armenia).

Because of the limited number of projects, we are not able to
use all interested persons in major roles. Sometimes we ask
people to travel, but often those in the "pool" are used in a
management, oversight, or consultancy role. In any event, a
high level of professionalism is required. Typically, technical
experts who work on development projects with us do so without
payment, though expenses are covered.

VITA is a not-for-profit organization that has provided
technical assistance in response to requests from developing
countries for more than 30 years.

For interested persons, please respond with an introduction to

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        1815 N. Lynn Street
        Arlington, Virginia   22209